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REPORT AND RECOMMENDATIONS

CURRENT SERIAL RECORDS

of the

Second Meeting of the

ANIMAL AND ANIMAL PRODUCTS RESEARCH ADVISORY COMMITTEE

January 11-15, 1965
Washington, D. C.

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ANIMAL AND ANIMAL PRODUCTS
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PREFACE

The second meeting of the Animal and Animal Products Research Advisory Committee was held in Washington, D. C., January 11-15, 1965. Dr. Nyle C. Brady, Director of Science and Education, served as chairman and Dr. H. C. Trelogan, Administrator, Statistical Reporting Service, served as vice chairman. Mr. Lyman D. McKee, a dairyman from Madison, Wisconsin, and a member of the National Agricultural Research Advisory Committee, served as liaison representative between the two committees.

During the public session on January 11, the following organizations presented statements pertaining to research needs:

American Veterinary Medical Association by Dr. L. Meyer Jones
National Association of Animal Breeders by George Nichols
National Livestock and Meat Board by Dr. William C. Sherman
American National Cattlemen's Association by Charles Quarre'
Livestock Conservation, Incorporated, by Bernard Ebbing
National Pork Producers Council by W. E. Smith
American Meat Institute by Dr. Dewey Bond
Institute of American Poultry Industries by Lee Campbell
Poultry and Egg National Board by Dr. Richard H. Forsythe
Southeastern Poultry and Egg Association by George Heitz
National Broiler Council by Dr. Robert Krueger
American Dairy Association by Dr. Dan Jacobson
Evaporated Milk Association by Fred J. Greiner
National Dairy Council by Dr. M. F. Brink
Milk Industry Foundation and International Association of
Ice Cream Manufacturers by Ervin L. Peterson
National Independent Meat Packers Association by J. McDaniel
U. S. Poultry and Egg Producers Association by Dallas Ferry
American Farm Bureau Federation by Donald E. Hirsch

Statements from the following organizations were presented by Max Hinds, executive secretary for the advisory committee: National Livestock Producers Association, National Wool Growers Association, National Turkey Federation, and the National Milk Producers Federation.

As a basis for its recommendations the Committee reviewed research progress reports which were supplemented by oral reports, visual materials, and discussions by leaders of research programs. In addition, a draft copy of the Livestock Research Study being conducted in response to a directive from the Senate was reviewed. Following these reviews and discussions the Committee divided into four subcommittees: (1) animal husbandry and livestock engineering; (2) diseases, parasites and insects; (3) utilization, nutrition, and consumer use; and (4) marketing and economics. All subcommittee recommendations were reviewed by the entire committee before they were approved for inclusion in the final report to be submitted to the Secretary of Agriculture.

Additional copies of this report may be requested from Max Hinds, executive secretary, Animal and Animal Products Research Advisory Committee, Research Program Development and Evaluation Staff, U.S. Department of Agriculture, Washington, D. C. 20250

I. GENERAL COMMENTS

Public Session

The public session at which representatives of industry presented many expressions and guides proved very helpful to the Committee. Representatives of the producer groups repeatedly referred to disease problems and the resulting losses. Marketing groups stressed flavor problems. Other important areas needing investigation include more efficient production and marketing techniques, nutrition and composition studies, utilization, microbiology, pest control, new products and new uses for the products of animal agriculture.

Progress Toward New Goals Commended

The Committee wishes to commend U.S.D.A. for facilitating this improved method of communication between industry and government. Also, the Committee was pleased with Dr. Brady's presentation of Department organization and administration. We commend him for his support and encouragement in the program for the continuing education and training of the Department's scientific and professional staff, for the steps being taken to provide additional support per scientist, for the continued emphasis on basic research, for the grant program to support the training of new scientists, and for the accelerated program of pesticide investigations. Also, the Committee commends the staff of the Department for the quality and quantity of research accomplished and reported. It is recognized that much time of staff members was devoted to preparation of the reports made available to the Committee.

State Research

The research progress reports contained more information on research at the State Experiment Stations than previously. This information is valuable in appraising the total research effort on a class of livestock or a commodity. We urge increased effort in getting State research activities included in the reports.

Adjustments in the Research Program

We note the necessity of discontinuing research projects and research stations when these projects or stations no longer contribute information commensurate with their costs. As taxpayers we must encourage the Secretary in these steps even though we disagree with some of the research efforts eliminated. It is the feeling of the Committee that rabbit and fur animal research should be continued on a scale and at a location permitting good research effort.

Low Level of Support for Agricultural Research

The Committee notes that only 1.3% of Federal funds spent on research are for agricultural purposes. The consumer is the ultimate beneficiary of agricultural research which has resulted in lower costs and superior food and clothing. We are concerned about the low level of support for agricultural research. Research has contributed significantly to the fact that only 19% of our disposable income now goes for food. Each new improvement in our food production or distribution brought about by research further reduces the cost of food and related items. These developments are important to animal agriculture because 49% of the consumer food dollar goes for livestock products which in turn furnish 2/3 of the protein in our food supply.

Human Nutrition

The Committee is encouraged by the increased emphasis on human nutrition. This improved emphasis on human nutrition will lead to improved health of our people.

II. GENERAL RECOMMENDATIONS

Additional Scientists Needed

It is recommended that provisions be made to employ additional highly trained scientists in order to expedite the greatly needed research work in the areas mentioned in this report.

Support for Graduate Training

It is recommended that a financial relationship be established with universities for the purposes of setting up research grants as a means of strengthening the total national research effort and that authority be sought to provide fellowships to support graduate study.

Increased Emphasis Needed for Marketing

The proportion of the consumer dollar that goes to marketing has about doubled since World War II while the portion going to the producer has remained fairly constant. This widened marketing margin provides opportunity for research that could benefit producers as well as others. Marketing must be made more efficient and producers must share in the savings. We recommend increased emphasis on marketing research, including the structure of marketing.

Evaluation and Advancement of Research

If progress on some specific project or field is not measurable from work of one scientist, group, or team of scientists, we would suggest that scientists from other disciplines be brought into the project. New approaches are needed and these may result from experiences in related fields.

Pets

Attention is called to the frequently unrecognized class of domestic animals usually referred to as pet animals or companion animals. Carnivorous pet animals consume large quantities of agricultural products chiefly of animal origin which have been estimated to be equal to several hundred million dollars annually, an estimate which needs to be verified. To date, public funds have not been utilized in the development or maintenance of this animal industry which is of economic importance to agriculture and particularly the animal industry. We recommend that the Department give consideration to establishing research in diseases, husbandry, and product utilization of this class of animals.

Horses

Horse numbers are increasing rapidly as a result of the rapid increase in the use of horses for recreation and 4-H Club activities. Knowledge of nutrition and disease control in horses is very limited. It is recommended that a horse unit be established at Beltsville or near a major experiment station to study the nutrition, prevention of skeletal defects, disease control, physiology of reproduction, and management of light horses.

III. ANIMAL HUSBANDRY AND LIVESTOCK ENGINEERING

A. General Comments

1. Imbalance of Appropriations for Animal Husbandry Research

During the past few years, a definite imbalance in assignment of funds to animal husbandry research has occurred as compared with other fields of farm research. The increase during these years has been about sufficient to cover the ordinary increment of rise in salaries over this period. The production efficiency of our animals is not such that we can let research problems aimed at improving them be held back by **such** a huge discrepancy in assignment of funds. We recommend that consideration be given to providing animal husbandry research with funds needed to bring this area of research up to that of other areas of farm research. This might then provide for the expansion needed in basic anatomical and physiological research on livestock and poultry when combined with genetics, to lead to improved efficiency in all production factors.

B. Facilities

1. U. S. Meat Animal Research Center

The Committee reaffirms and strengthens the recommendation made in last year's report on the establishment of a U. S. Meat Animal Research Center on lands formerly used by the Department of the Navy as an ammunition depot near Hastings, Nebraska. The Committee was pleased to learn that a substantial area of this land has already been assigned and that the Secretary's announcement indicated the Center is to be established. The Committee urges that the remaining portions of land required to permit the development of this Center as planned be assigned as soon as it is exccessed by the Navy. The projected facilities and research program with meat animal species at this very desirable location will in considerable measure fulfill a significant deficiency in the Department's meat animal research. The research planned will go far towards meeting the urgent needs of livestock producers to provide meat animals and animal products which the consumer wants and will buy and which can be processed by the packer with a minimum of waste. The research projected will also make an important contribution towards solving the reproduction problems of meat animals. The consolidation at this Center of existing outlying projects is sound research planning on the part of the Department. The Committee further urges that livestock housing and animal management research and meat animal quality and marketing research be added to the program of this Center. The Committee recommends that the program of the Center be developed and conducted cooperatively where possible with the State Agricultural Experiment Stations, particularly those in the North Central Region.

2. North Central Dairy Cattle Research Laboratory

The Committee recommends the establishment of the North Central Dairy Cattle Research Laboratory for the purpose of providing an integrated program of research on dairy cattle-forage utilization. Such a laboratory will contribute substantially to the economic position of the modern family-size dairy farm by conducting investigations on (a) the evaluation of forages as feeds; (b) the role of the rumen in forage utilization; (c) the effects of forage concentrate ratios on milk yield and composition; (d) the nutritional and production consequences of adjusting, harvesting, preserving and feeding practices in accordance with economic changes; and (e) the development of cattle that will utilize forages more effectively. The proposed laboratory should be located on or adjacent to the campus of a land-grant institution. The research should be conducted jointly with the State in which the laboratory is located and should be planned cooperatively with the State Agricultural Experiment Stations of the North Central Region.

C. Specific Areas of Research in Animal Husbandry

1. Beef Cattle

a. Reproductive inefficiency. Expand research aimed at developing methods for improving beef calf crop percentages. (See also page 9.)

b. Carcass quality. Increase research aimed at developing methods for improving lean-fat ratios and taste appeal of beef. The Committee suggests that the basic way to solve the problem of excess fat is to breed it off providing it is not to the detriment of the eating quality of beef.

c. Breeding systems - crossbreeding. Increase emphasis on determination of the best sources of germ plasm for improving production efficiency combined with product quality. Crossbreeding of both domestic and foreign breeds should be studied.

d. Weaning weights. Give increased emphasis to research aimed at the improvement of weaning weights.

e. Individual identification. Develop a practical method of individual identification that can be read at "cowboy" distance and will maintain legibility at least for several months on cattle having a coat of black hair.

2. Dairy Cattle

a. Mastitis prevention. Reduce losses from mastitis through management, environmental, physiological and genetic studies directed towards minimizing the incidence of this costly disease. It is our no. 1 problem! (See also page 10.)

b. Milk composition. Develop and evaluate nutritional and physiological controls for the composition of milk and milk fat through studies on the factors altering the hydrogenating capacity of the rumen and the ability of the cow to alter milk fat composition physiologically. Studies also should be made on factors affecting feed intake including rumen metabolism and the relation of these factors to milk production and milk composition.

c. Reproductive inefficiency. Expand physiological and management research which would increase the reproductive efficiency of dairy cows and bulls by reducing embryonic mortality, minimize ovarian dysfunction, improve semen production and increase the efficiency of semen utilization. (See also page 9.)

d. Basic genetics of physiological traits. Initiate and expand research on the biochemical, immunological and physiological traits of dairy cattle blood, milk and other tissues in order to learn their relation to production and other performance characteristics, to determine the nature of their inheritance and to reveal new possibilities for early and accurate detection of superior animals.

e. Farm records. Improve production efficiency and net incomes of producers by developing dairy farm records as a management-planning aid by (1) expanding the scope of dairy production records to include physical quantities and dollar costs of production inputs for the whole farm as well as the dairy enterprise, and (2) developing procedures for using dairy production and feed records as a basis for determining the most profitable composition and amount of grain and forage to feed.

3. Poultry

a. Basic research. Many of the more simple poultry production problems have been solved. Other problems remain to be solved and new ones arise constantly. The unsolved problems are largely complex and basic information on genetics, physiology, biochemistry, nutrition, and avian anatomy are needed for solution. It is recommended that basic research in all these disciplines be emphasized and expanded in order to be able to solve future industry problems promptly and efficiently.

b. Avian leukosis (See also Poultry Diseases, page 12.)

Leukosis is still the major cause of mortality in poultry flocks and is rapidly becoming a prime cause of death and condemnation among broilers and young replacement pullets. Both basic and applied research should be expanded especially as related to the "acute" type of leukosis. The precise etiological relationship between the causative agents of the neural, visceral, and osteopetrotic forms should be determined. The possible relationship between coccidiosis and avian leukosis should be studied. Considerably increased efforts to develop prophylactic vaccines and/or control measures should be adopted, both at the East Lansing laboratory and at other laboratories interested in and equipped to pursue such research.

c. Fertility and hatchability. Reproductive efficiency requires improvement through physiological, genetic, nutritional, and management studies on fertility and hatchability. Only limited information is available on such items as sperm viability, sexual behavior, selection, and feeding for reproductive fitness. Reproductive inefficiency is one of the most important problems of the turkey industry.

d. Egg production. Improvements in egg production have been slow but consistent in the past. Recently, progress has become slower due to an apparent production "ceiling" or "plateau." To make further progress research is needed, for example, on genetic tools for breaking through current production ceilings, nutritional requirements of laying hens, neural and hormonal control of egg formation.

e. Feed utilization efficiency. In order to increase further the efficiency of production, feed utilization efficiency should be improved. It is proposed that this be accomplished through such research as genetic selection for high feed conversion, studies on mechanisms of digestion and absorption, and studies of the values of feedstuffs as sources of critical nutrients.

f. Wholesomeness and consumer acceptability. The possibility of improving the quality, wholesomeness, and consumer acceptability of poultry meat and eggs through research on the effects of genetic and nutritional factors upon carcass composition, flavor, tenderness, juiciness, and nutritional value should be explored.

g. Egg breakage. Losses due to egg breakage are often considerable especially in eggs produced by hens after 8 to 9 months of production. Studies should be initiated on the physiology of shell formation, mineral relationships in the diet, genetics of shell strength, and management factors.

h. Breast blisters. Breast blisters constitute a major cause of downgrading and economic loss in broilers and turkeys. Research is needed in management, breeding, and nutrition in order to determine the real causes for this condition. (See also page 13.)

i. Fat metabolism. An increasing number of broilers are reported as slick and greasy during the terminal stages of processing. Not only are these birds undesirable for marketing but large numbers in a particular lot of birds cause mechanical problems in processing. Basic studies in fat metabolism, together with studies in nutrition and feed additives, should be undertaken in an effort to solve this problem.

4. Swine

a. Carcass quality. Needs improvement through intensive basic research on the genetic, physiological and nutritional aspects of muscle development, fat deposition, and metabolic processes concerned with efficient use of feed in the production of lean pork with superior flavor, juiciness, and tenderness.

b. Reproduction. Expanded and intensified research is needed on factors affecting estrus detection and synchronization; ovulation, implantation and fetal development; semen production, handling and long-time storage; and genetic, nutritional and environmental influences on reproductive performance in both males and females. Development of practical means for using artificial insemination in swine will permit more extensive use of outstanding sires, improve litter size, and reduce production costs.

c. Physiology of growth and development. There is an urgent need for information on physiological functions and body processes during growth, development and reproduction to increase the effectiveness of all areas of swine research and identify physiological traits under genetic control which can be utilized to improve efficiency and product quality under different nutritional and environmental conditions.

d. Breeding and genetics. Accelerate research in this area with emphasis on selection for different important single traits, interrelationships of different single traits with each other and with environmental factors, identifying physiological and biochemical responses under genetic control, and extending knowledge of genetic principles by increased use of laboratory organisms and computer techniques to develop more effective methods for improving seed stock herds and their use in commercial swine production.

5. Sheep and Wool Production

a. Carcass quality. Speed production of consumer preferred lamb through research to develop more effective selection methods for merit of lamb meat both in the carcass and in the live lamb. Further, to study growth and development of the various parts, optimum market weights, and to determine effects of various production factors on lamb meat.

b. Reproductive inefficiency. Improve reproductive efficiency by research to increase ewe fertility, lambing rates, multiple lambing, lamb survival both before and after birth, diagnosis of pregnancy and removal of seasonal restriction. (See also page 9.)

c. Wool quality and production. Improve fleece weights and wool quality through research to adequately measure fiber length, density, fineness, and uniformity of fleeces and to study the genetics, physiology and endocrinology of follicle and fiber development as related to wool production.

d. Artificial insemination of sheep. Successful use of artificial insemination in sheep has not been demonstrated in the U. S. The perfection of a means to successfully freeze and store ram semen would allow widespread use of superior rams now being produced as a result of many years of sheep selection and breeding and could speed production of consumer preferred lambs. Storage of ram semen would also offer means by which rams could be progeny-tested and produce offspring after their death.

e. Weaning weights. Early weaning and feeding of range lambs during drought conditions needs investigation. During years of below average moisture, lack of feed causes the ewes to prematurely halt lactation and forces weaning of the lambs. If during such years these lambs could be successfully and economically fed without a high death loss, it would be beneficial to western sheep operators.

f. Breeding systems and crossbreeding. Increase lamb and wool production and efficiency by breeding research to compare breeds both pure and in crosses and to increase progress from selection including the perfecting of performance and progeny tests.

g. Nutrition. Strengthen basic and applied research on sheep nutrition by more precisely determining nutritional requirements for maximizing growth rate and improving feed efficiency.

6. Other Species

a. Goats. Initiate research on Angora goats to improve reproductive rate to obtain knowledge of nutritional requirements, to develop improved management practices, to reduce losses from cold shock, to measure mohair quality and to develop breeding and selection methods to improve mohair quality and to increase efficiency of production.

Initiate research to improve milk production of dairy goats through studies on selection and crossbreeding, nutrition, environmental stresses and endocrine effects on reproduction and lactation.

b. Fur animals and rabbits. Strengthen research for mink and other fur animals to improve reproductive efficiency, to determine nutritive requirements, to permit more practical diets, and to improve fur quality by developing adequate measures and by obtaining basic information on fur growth and development and on genetic, environmental and nutritional factors to improve merit of fur produced.

Strengthen research to increase efficiency of production and quality of rabbit meat produced through more precise determinations of nutritive requirements, by reducing environmental limitations, by developing practical semen storage and artificial insemination, by developing more adequate measures of meat quality and by improving both quantity and quality of meat produced through crossbreeding and selection.

Rabbits are a source of food for certain ethnic groups and also are needed by laboratories and hospitals. The industry is small but scattered through many States. It is recommended that a small rabbit research unit be continued at Beltsville or other suitable location to study the nutrition, management and disease control of rabbits.

The Committee is of the opinion that rabbit and fur animal research should be concentrated and relocated.

D. Agricultural Engineering pertaining to Livestock

1. General Areas of Research

a. Environment. Much more basic information needs to be learned in the laboratory in order to determine optimum environments for farm animals. Specific data are needed on the influences of the various factors such as temperature, humidity, air motion, thermal radiation, and light on growth, health, fertility, production, feed consumption, and heat and moisture dissipation. Structures and equipment for economically providing the optimum environments under practical production conditions need to be developed, field tested, and evaluated.

b. Waste disposal. Economical, sanitary handling and disposal of manure and other wastes from cattle, hogs, sheep, horses and poultry is an increasingly serious problem. The acuteness of the problem is especially great on the fringes of metropolitan areas and where large numbers of livestock are maintained in a relatively small area. There is an urgent need to expand research which will develop and test methods and equipment for handling livestock wastes in a manner which will (1) reduce labor costs for this operation, (2) prevent contamination of water supplies, (3) provide optimum animal health, (4) eliminate breeding of insects, (5) minimize aesthetic nuisances of dusts and odors, and (6) protect public health.

c. Mechanical insect attractants. Because of the increasing emphasis on pesticide residues in animal products, there is growing interest in the possibility of destroying insects with mechanical devices. We urge an expansion of research in this area.

d. Livestock research instrumentation. The increased complexity of scientific research has placed severe limitation on the very nature of research because of the lack of suitable instrumentation. Research in this field should be expanded to provide more suitable instrumentation for basic and applied research.

2. Specific Areas of Research

a. Dairy

(1) Mechanical milking and mastitis. Basic multidiscipline research on the mechanics and physiology of milking is needed to determine more definitely the relation of mechanical milking to the incidence of mastitis and to develop new or improved milking equipment.

(2) Meters to measure milk. Research is needed to develop suitable meters for use in measuring individual cow production and bulk milk from tank to tank.

b. Poultry

(1) Handling live poultry. Present methods of loading and hauling live poultry result in considerable losses from bruising, broken bones, and dark spots, as well as substantial costs because of inefficiencies of the system. Research is needed to develop an entirely new procedure for the handling of live poultry.

(2) Insulation and ventilation. Research is needed in order to determine relative values of insulation and controlled ventilation in production of all types of poultry, together with studies of various types of insulation and fans available on the market for these purposes.

IV. DISEASES, PARASITES AND INSECTS

A. Facilities

1. Beltsville Parasitological Laboratory

There is urgent need for early construction of an adequate facility for fireproof housing of the internationally famous Index Catalog of Medical and Veterinary Zoology, the parasite collections, and sufficient laboratory space for the necessary research in all phases of parasitology.

2. National Animal Disease Laboratory

It is recommended that facilities of the NADL now allocated for the regulatory activities be assigned for research activities. Also, that a separate adequate facility be provided for the regulatory activities. This will permit more effective and efficient operation of both programs.

3. Toxicology Laboratory at College Station, Texas

The Department is to be commended for providing for the toxicology laboratory to permit expansion of basic research on toxic materials. This will augment and expand the effective program at the Kerrville, Texas, laboratory.

4. Poisonous Plants Laboratory at Logan, Utah

The Committee commends the Department for completion of the Poisonous Plants Laboratory. This will notably strengthen research in a most important area.

B. Reproductive Inefficiency

Reproductive inefficiency remains a serious problem in all species of livestock and poultry. Infertility, embryo mortality, and death of the newborn can be reduced through genetic, nutrition, disease, environmental, and management research. A closely coordinated multidiscipline approach will be necessary. (See also pages 2, 3 and 6.)

C. Diseases needing Increased Research Effort

1. Beef Cattle Diseases

a. The respiratory disease complex is still responsible for the greatest morbidity and mortality losses experienced by the beef cattle industry. Research on it though difficult and expensive should be expanded.

b. Anaplasmosis. A disease caused by a microscopic parasite which destroys red blood cells continues to be responsible for heavy losses in the Southcentral and Western States.

c. Footrot causes severe lameness and prevents proper feeding with great loss of weight. Many of the causes are not known.

d. Pinkeye (keratitis), both infectious and noninfectious, is responsible for great losses in weight and milk production over the entire Nation.

e. Pneumo-enteritis complex involves the respiratory and digestive systems and is responsible for death of many calves.

f. Virus diarrhea-mucosal disease complex is characterized by a diarrhea and ulcerations of the mucosal lining of various parts of the body. It is widespread and responsible for high morbidity and mortality.

g. Vibriosis and Trichomoniasis are infections of the reproductive system responsible for abortions and infertility.

h. Leptospirosis is one of the most variable diseases ever studied. It affects many species of animals and man and there are many strains of the organism that cause the disease.

i. Bovine lymphosarcoma (leukosis) is a form of cancer which involves the blood-forming organs and the lymph system. The incidence is increasing.

j. Bloat is an abnormal accumulation of gas in the paunch. It occurs frequently in cattle while grazing legumes and in those on feed.

2. Dairy Cattle Diseases

All of the diseases noted under "Beef Cattle" are also of significance to dairy cattle. Research results will be of value to both.

a. Mastitis, an inflammation of the udder, resulting from infection with microorganisms continues to be the most costly disease of dairy cattle. (See also page 3.)

b. Metabolic disturbances such as bloat, milk fever, and ketosis are responsible for substantial losses and impaired performance of dairy cows.

3. Swine Diseases

Swine disease research should be expanded and accelerated to the level justified by the importance of the pork-producing industry, with special emphasis on:

a. Abscesses, which occur chiefly in the neck and jowl region but may develop in other parts of the body, have become very serious in recent years. They cannot be detected in the live animal and frequently cause substantial loss of edible portions of the carcass. The most serious aspect is that to the extent selling prices of market animals are discounted, the producers of healthy animals must share the burden with producers of infected animals.

b. Respiratory disease complex includes virus pig pneumonia, influenza, and pasteurellosis. Confinement rearing by pork producers has intensified the problem.

c. Enteric infections are the predominant group of diseases of little pigs. Transmissible gastro-enteritis is caused by a virus and involves the digestive tract and has been responsible for serious losses. Some encouraging progress has been made since last year but there is urgent need to develop a safe and effective immunizing agent against the disease.

d. Atrophic rhinitis is a transmissible disease which involves the turbinate bones of the nasal passage. Lesions are most common in 2- to 5-month-old pigs. Encouraging progress has been made but there is still need for more information on causative agents.

e. Mastitis-metritis complex affects the reproductive system including the udders. It is responsible for abortions, baby pig deaths, and infertility.

f. Hog cholera. Progress in its eradication is encouraging. Research cannot, however, be lessened until eradication is completed.

4. Sheep Diseases

There is greatest need for increased research activity on the following:

a. Epididymitis is an inflammation of a gland attached to the upper portion of the testicle. It is a frequent cause of sterility in valuable rams in purebred and range flocks.

b. Mastitis, inflammation of the udder, prevents the ewe from producing adequate milk to rear her lambs.

c. Footrot causes lameness that handicaps the sheep in grazing with resultant weight loss. Similar to, but not identical to, the condition in cattle.

d. Scrapie is caused by a virus and has a long incubation period, usually about 18 months. Course of the disease is variable, 6 weeks to 6 months.

e. Vibriosis causes early abortions and infertility. Progress on developing an immunizing agent is encouraging.

f. Urinary calculi is similar to kidney stones in man. Death losses are high in feedlots.

5. Poultry Diseases and Parasites

a. Leukosis is still responsible for the most deaths of poultry. Seriousness of the disease has been increased by appearance of a more acute form in many broiler-producing areas. (See also Avian Leukosis, page 4.)

b. Mycoplasma-gallisepticum (air sacculitis) is still responsible for extremely high condemnations in poultry dressing plants under compulsory inspection.

c. Coccidiosis is caused by microscopic parasites and in spite of the development of several coccidiostats is responsible for high mortality in young birds and poor performance in birds of all ages.

d. Salmonellosis, especially the paratyphoids, is considered the most important poultry disease transmissible to man. It causes much loss in baby chicks and poults.

e. Gumboro disease (avian nephrosis) is an acute disease of young chickens in which there is a diarrhea and severe involvement of the urinary organs (kidneys, ureters). The cause is not known.

f. Infectious Synovitis in broilers and turkeys.

g. Capillaria (thread worms) are very small round worms that burrow into the lining of the crop and intestines. They are a serious problem in laying flocks.

h. Chiggers are small external parasites which infest the skin, especially of young poults, inject a highly irritant substance into the wound and apparently causes a toxemia which kills the birds or renders them unfit for processing. Losses are heavy in many concentrated turkey-producing areas.

i. Breast blisters, both in turkeys and broilers, result in serious losses in dressed birds. It may be a nutritional, management, or disease problem. (See also page 5.)

6. Horse Diseases (See also page v.)

Research on horse diseases was discontinued several years ago. With increased production of light horses it is recommended that there be authorization to reactivate such research. Problems of immediate concern include:

a. Equine piroplasmosis is a blood disease transmitted by certain species of ticks.

b. Reproductive diseases. Additional information is needed on reproductive diseases, both infectious and noninfectious.

c. Nutritional diseases may be the result of lack of information on nutritional requirements of the horse.

D. Parasites

Man is losing the battle with internal parasites. Changes in livestock management (confinement rearing) emphasizes the urgency for accelerated research effort on parasites that affect all species. Especially important is knowledge of the role played by parasites in transmitting infectious diseases. (See also page 12.)

E. Insects

A similar situation exists in man's fight with insects and external parasites. Discovery during the past year that a small gnat is a reservoir and transmitter of a virus disease of sheep spotlights the seriousness of the insect problem. Face flies, horseflies, ticks, chiggers, and mosquitoes are responsible for enormous losses. (See also page 12.)

F. Toxicology and Poisonous Plants

Residues of insecticides, herbicides, and radioactive fallout in plant and animal tissues are still serious problems because of their public health implications. It is gratifying to note that much progress has been made and that prospects are excellent for more.

There is still great need for the identification, control, and eradication of plants poisonous to livestock such as halogeton, bitterweed, and locoweed.

V. UTILIZATION, NUTRITION and CONSUMER USE

A. Utilization Research

The objective of utilization research is to improve income to farm producers and to raise the standard of living of American consumers. This can be achieved by reducing processing costs, developing new and attractive food products that will increase demand, developing new and industrial uses of animal byproducts and converting animal products into products of greater value. This requires a basic knowledge of the chemical, physical and microbiological properties of the various products. The Committee recommends greater emphasis on utilization research to encompass the following areas:

1. Milk and Dairy Products

Solution of flavor problems in milk and dairy products is our greatest need today in achieving increased milk consumption. Increased research attention should be devoted to the flavor chemistry of all dairy products including fluid milk, butter, cheese, milk concentrates and byproducts.

Basic research is needed on the physicochemical behavior of milk constituents by composition, structure and physical equilibria studies designed to lead to increased and improved utilization of conventional dairy products and of the fat, protein, skim milk and whey solids fractions of milk in new and improved products.

An expanded program of research should be conducted: To test in a pilot plant the laboratory procedure for making low-fat cheese; to improve butter oil or ghee for export markets and possible domestic use; to improve sterile, aseptically packaged milk concentrates so they will neither gel, develop sediment or become stale in storage; to develop the technology of highly concentrated milks for production of products as intermediates in dry milk and food manufacture; to find new uses for cottage cheese whey; to develop dry casein or caseinates capable of regelling to their original water content for use in preparing such foods as dried cottage cheese; to separate and purify the minor nitrogenous components of milk for dried food, allergenic, pharmaceutical or physiological applications.

An expanded program of research should be conducted to test in a pilot plant the commercial feasibility of producing a whole milk powder with an extended shelf life. We commend the efforts of the USDA staff researchers for their success in developing the foam dry process.

2. Meat

New and expanded biochemical research is needed on basic aspects of meat composition such as the occurrence, characterization, and reaction of muscle enzymes and meat pigments in order to provide scientific knowledge for improving meat processes and products. In microbiology more emphasis should be placed on the growth characteristics of possible toxigenic microorganisms in meat substrates so as to develop more effective means of insuring the safety of meat products. Research on meat technology should be expanded with special emphasis on the development of new dehydrated, cured, and canned products. This research should take into consideration methods of improving heat transfer, pasteurization, objective methods of assessing quality and composition in processed meats.

3. Poultry

a. The industry encounters marked variations in flavor and texture (tenderness and juiciness) of poultry during the manufacture of new product forms. Basic and fundamentally-oriented applied research should be increased on such problems as (1) the loss of distinctive poultry flavor that tends to occur when poultry is combined with other prepared food ingredients, (2) occurrence of warmed-over and stale flavors in cooked chicken and turkey products, and (3) texture changes induced by various processing treatments including poor rehydration of dried products. Development of more information on the inherent properties of components of chickens and turkeys is considered fundamental to, and is needed for the development of optimum processes for dehydrating, freezing, heat processing, irradiation processing, comminuting and formulating the convenience products now demanded by consumers.

b. There is need to develop poultry meat products to be used for breakfast and lunch such as chicken and turkey sausages, patties, and sandwich meat.

c. Research is needed on the further processing potential of fowl since greater use of this product is needed, possibly in hen rolls or chicken soup rolls.

4. Eggs

More research on the inherent fundamental, chemical and physical properties of the protein and lipid components of eggs should be conducted. Objectives should include (a) a full description of the properties of these major egg components; (b) comprehensive and useful information on the relation of the classical physical-chemical properties of these

components to the functional properties of egg products, especially their unique foaming, coagulating and emulsifying properties; and (c) a search for means of increasing the value of egg products including studies of the potential for making useful chemical and/or enzymatic modifications of one or more of the components. This work is especially important at present because of the decreasing use of table eggs and the increasing consumer demand for prepared or convenience products. Work on the perfection of methods for eliminating pathogens from egg products should be pursued vigorously because of the current widespread concern about this problem.

5. Food and Industrial Uses for Animal Fats

The most promising outlets for animal fats continue to be in new chemical products valuable in such large volume industrial marketing areas as plastics, plasticizers, lubricants, lubricant additives and in biodegradable detergents. Research should be expanded to develop increased outlets in these areas and to facilitate the preparation and study of derivatives potentially useful in such large volume markets.

Developments in nutritional and industrial uses for animal fats and oils have been limited frequently by lack of knowledge of the molecular components present. Recent advances in instrumentation and in physical methods of measurement offer the possibility for development of the new and better methods which are urgently needed. Research needs to be expanded in isolating, identifying, characterizing and modifying the molecular constituents of fats and oils as well as their chemical derivatives.

6. Wool and Mohair

Basic research on wool and mohair composition, structure and stability needs to be continued and expanded in order to provide the necessary adequate fundamental knowledge to enable future development of new and better products. Needed are means of imparting permanent stretch recovery to wool garments, durable setting treatments to give smoothness of fabric surface on drying, modifications for wrinkle resistance, treatments for permanent protection against microbial and insect attack. Research should be initiated to explore (for practical application to wool and mohair) promising leads on chemical grafting of preformed polymers that appear capable of imparting a wide range of new and desired finishing effects. The possibility should be investigated that chemically modified wools can be developed that would be substituted for a high percentage of the synthetic fibers now used in wool-synthetic blend fabrics. Pilot plant research on the woolen system for processing wool should be initiated to complement present research on the worsted system of processing and thereby obtain greater benefit of results for the future well-being of the industry. (See also recommendations pertaining to market quality, page 21.)

7. Hides, Skins and Leather

Physical, chemical and biological investigations on hides and skins need to be strengthened in order to develop information on the properties of collagen and the other components to permit their use in new products that will create outlets for hides in areas other than the traditional leather markets. Emphasis should be continued on the chemical modification of hide proteins to develop leathers with new and improved properties, on investigations to eliminate hide defects in order to improve the quality and uniformity of leather, and on new processing methods to obtain greater economies in leather production in order to enhance its competitive position with the growing body of substitutes.

B. Human Nutrition and Consumer Use Research

1. Expanded Program in Food and Nutrition

Our Committee reaffirms our support for immediate implementation of the long-range plans for research in foods and nutrition projected in the 88th Congress Senate Document 35. The essence of the recommendations in that document are that the present scale of research in food and nutrition is inadequate in light of the Department's responsibilities and the Nation's needs. It contains recommendations for three new regional laboratories for food and nutrition research -- in the north-central region, in the southeast, and in the southwest -- and expansion of facilities at the USDA's Research Center at Beltsville, and a substantial increase in the total scientific effort. We recommend that high priority be given to construction of the headquarters facility planned for the expanded program. Present facilities are scattered and do not provide for nutrition studies with human subjects. We feel it is most desirable that research and administrative activities of this food and nutrition program be brought together into a single facility in the Washington area adequate to meet their long-range mission, including quarters for urgently needed studies on healthy human subjects.

2. Human Nutrition

We have noted with great interest the research findings of the Department nutritionists demonstrating that certain diet patterns or nutrient combinations lead to disturbed fat metabolism, tissue degeneration, and an appreciably shortened life span in some experimental animals. These provocative observations should be explored in depth to ascertain the factors responsible for these adverse effects and to learn the extent to which diet may accelerate or prevent these changes. At the same time, we feel it is urgent that research be undertaken to determine the significance to humans of these experimental findings on animals which implicate certain food or nutrient combinations.

3. Food Handling and Cooking

There is a gap in the Department's research program in the development of information on food handling, preparation and cooking methods and equipment for quantity food service. Over one-fourth of all foods may be consumed away from home. Research on consumer use practices should be extended to include the problems of cooking and storage of meat, poultry and dairy products for food service in institutions; safety, eating quality and economy should be considered.

We urge that further emphasis be given to the problem of microbial safety of dishes containing meats and poultry in the home or institution. Requirements and recommendations for refrigerator storage should be studied. We also recommend that the implications in terms of safety and quality of refreezing both raw and cooked meats and poultry be examined.

4. Food Composition

The Committee welcomes the publication of the revised edition of Agricultural Handbook No. 8, Composition of Foods -- Raw, Processed, Prepared, which it recognizes as the most comprehensive reference work ever published on the nutritive value of foods. Even so, there is need for an expanded program of research on the analyses of nutrients and the forms in which they appear in foods, to keep abreast of new foods, combinations of foods, and new processing and handling methods.

5. Food Consumption Patterns

The Committee is pleased to learn that the Department is making a nationwide food consumption survey in 1965 which will include seasonal data and information of the food intake of individuals as well as the food used at home by households.

This survey will provide a wealth of statistical data for many users. It will be useful in developing government food and agriculture policies and programs. It will provide an important measure of nutritional adequacy of diets that is basic to nutrition and consumer education. Like earlier studies made by the Department, the 1965 survey will be widely used by industry people in studying markets for their products. Adequate funds should be provided for the tabulations, analyses and publications of the data that will be required to make full use of this important survey.

VI. MARKETING AND ECONOMICS

A. Market Quality

1. Dairy Products

a. Measurement of the quality of fresh fluid in bulk tanks.

Methods for evaluating the quality of fluid milk received in cans are not practical for use under bulk handling. With a changeover from can to bulk handling of milk, the first receiving point shifts from the milk plant to the farm. The absence of laboratory facilities, the volume of milk to be tested, the length of time which can be allotted for testing, and the characteristics of the milk itself are but a few of the factors which render presently available quality tests impractical for use under the bulk system. Research should be initiated to develop rapid, accurate, and low-cost tests for determining the quality of milk stored in bulk tanks. Rapid, reliable tests for sediment, flavor, odor, and bacterial condition which can be performed at the time of pickup would benefit producers, haulers, and handlers of bulk milk.

b. Market quality of fluid milk as affected by new methods of handling. Recent developments in the handling, transportation, and processing of fluid milk have caused many changes in the merchandising of this product. Research should be initiated to determine the effect of these new practices on the keeping quality of fluid milk. Information is needed on (1) the effect of the ultrahigh temperature, extremely short-time pasteurization procedures on flavor and other quality attributes of milk during the time it is in storage and channels of distribution, and (2) on the numbers and kinds of microorganisms as well as flavor changes in milk marketed under these newly created conditions.

c. Shelf life of milk products. Research is needed to determine methods of extending shelf life of milk products particularly with respect to the deterioration of milk fats during shelf life.

d. Butter flavor. Current work on butter flavor development and stabilization should be continued and expanded. Improved products with more distinctive flavor should help materially in overcoming some of the adverse effects of the wide price differential. Also, the possibility of marketing low-fat spreads should be explored. Experiment station studies have shown that such products can be produced with certain combinations of milk fat, nonfat milk solids and emulsifiers. The consumer acceptability of such products and the influence of such products on the market need to be explored.

2. Livestock and Meat

a. Flavor and tenderness. The work that is currently being conducted on the relationship of marbling in beef to ultimate consumer satisfaction in terms of flavor and tenderness is some of the most important research that is being conducted in the livestock field. The results of this work should ultimately have far-reaching effects in many aspects of the livestock and meat field, particularly in the breeding, feeding, slaughtering, wholesaling and retail segments of the meat industry.

b. Quality and yield factors. The studies currently being conducted should help in determining what the characteristics are in live animals that produce desirable quality and yield factors in meat and how they can be developed in the live animals.

c. Standards for grades. Improvement in standards for meat grading are needed and should emanate from current research. It is vitally important that better methods of quantitative and qualitative evaluation of both live and dressed animals be developed.

d. Shelf life of fresh meat. Additional work is needed to increase the shelf life of fresh meats in retail markets in addition to the research already conducted on refrigeration, sanitation, and lighting. It is vitally important to all the retail food industry to conduct research on packaging materials and treatment of film and/or meats themselves which will help hold the bloom life of meats.

3. Poultry Products

The Committee commends the division for its aggressiveness and promptness in implementing and continuing many of the suggestions made by the advisory committee last year. It is recommended that the work be continued with special emphasis on the following:

a. Quality maintenance of eviscerated poultry and turkeys. Research should be continued to determine the effects of different methods of slaughter, scalding temperatures and eviscerating. Specific attention should be given to dry and ice pack methods of whole and cut-up birds, overwrapped with different types of overwrap materials as is now being done in many stores. A determination is needed of the length of shelf life and of the constant temperatures if packaged at a processing plant and the methods of shipping that can be used to maintain it as fresh poultry. Also, tests are needed for flavor, tenderness, and juiciness in all types of dressed poultry and turkeys.

b. Salmonella in eggs, poultry and poultry products. Research should be expanded to improve present processing plant methods and to develop new techniques for reducing the incidence of Salmonella in all eggs and poultry, also to include further processed eggs and poultry products without affecting the quality of said products. Investigations should be made to determine under which conditions Salmonellae proliferate in feedstuffs, poultry, eggs, and in egg and poultry products.

Additional research is needed to develop improved methods of testing Salmonellae in eggs and poultry meats, with special emphasis on simple, rapid, reliable and economical methods for the detection and enumeration of organisms.

c. Proper heat processing procedures. Research is needed to obtain knowledge of the proper heat processing procedures necessary to attain a safe product without overcooking of poultry and further processed chicken and turkey products. The study should include taste, tenderness, and juiciness from precooking procedures of products as well as safety.

d. Objective measurement of pesticide residues in eggs and poultry products. Research is needed to develop rapid, simple and economical screening tests for the industry's use to detect residues of chlorinated hydrocarbon or other pesticides.

4. Wool and Mohair

The Committee recognizes that due to the small amount of man-years available in this area, that this activity is obviously limited. The present plan for this year's research is satisfactory in that it encompasses several areas in which research has been needed. It is recognized that utilization research is being done on some of the problems listed below, however, we recommend an appraisal of the problems in terms of capabilities within the market quality research program and possible joint effort if it has a potential for solving the problems. The following problems are proposed for further research:

- a. Improved methods are needed for quality appraisal of wool to insure better grading procedures.
- b. Develop resistance to soiling in woolen fabrics.
- c. Develop greater resistance to felting and pilling.
- d. Develop resistance to fabric insects through chemical treatment of wool.

- e. Improve insect control in marketing channels with efforts to eliminate or reduce pesticide residues.
- f. Study is needed to determine the possible allergenic properties of new treated woolen fabrics.

B. Equipment and Facilities

1. Dairy Products

The Committee feels that the present work in this area is adequate since private industry seems to be fulfilling most of the needs in this area.

2. Livestock, Meat and Wool

The Committee noted that two new studies had been started (1) processing "hot" pork products and (2) automating sales and yarding operations of livestock markets. Two of last year's recommendations are resubmitted and a new one on boning operations is added.

a. Layouts and work methods for cattle feedlots. Engineering research is needed to develop layouts and work methods for floored and covered cattle feedlots that would minimize operating costs. Uncovered pens with dirt floors require about 200 sq. ft. per animal and during wet weather animals stand in deep mud. It is estimated that covered and floored pens could reduce area requirements to 50 sq. ft. per animal. There is need to obtain data and determine the operating costs under a covered and floored system.

b. Layouts and work methods for wool warehouses. Engineering research is needed in wool warehouses to develop standards for container size for receiving wool, and packaging for handling, storage and shipment. For many years grease wool has been handled by manual methods with excessive labor costs in warehouses scattered throughout production areas. Some structures are outmoded which make adoption of new techniques impractical.

c. Improving efficiency of beef and veal boning lines. The boning of beef and veal has had a rapid growth in the last few years. The increased use of boned meat probably can be attributed to consumer acceptance of convenience products in the form of frozen "heat and serve" and "ready to cook" meat dinners, portion-cut boneless meat, ground meat patties, and other processed meat products. Most of this boning is accomplished through boning lines in slaughter plants and in independent boning houses. In many instances, these boning lines are in facilities that were built for other purposes and due to structural

limitations, operations cannot be arranged in sequence for the most efficient flow of products through the house. In other cases, outmoded equipment and handling methods are used resulting in excessive labor costs. Engineering research is needed to provide data on work methods, crew sizes, equipment types, and facility layouts for lines handling various volumes of meat to provide plant operators with guidelines which could be used to reduce operating costs.

3. Poultry and Eggs

a. Improved methods and equipment for slaughtering and defeathering turkeys. This research is similar to related research on chickens recommended by the Committee last year. Improved methods and equipment are needed to prevent the introduction of contaminated scalding water into the birds' air sacs which is a hazard to product contamination. Much of the data that will be developed in studies planned for chicken slaughtering and defeathering operations will also apply to the slaughter of turkeys. However, additional research is needed on this class of poultry because the required bleeding and processing time, carcass dimensions, and weight involve different problems calling for analytical studies and tests to be conducted with turkeys in commercial processing plants.

b. Improved methods and equipment for removing turkey ligaments. It has been observed in plant operations that little or no effort was made to remove the leg ligaments from whole ready-to-cook turkeys or from drumsticks sold separately, and extremely high labor inputs were required to remove the ligaments when drumsticks were deboned for such specialties as turkey logs. In addition to requiring a relatively high labor input and causing a production bottleneck, leaving the ligaments in the whole bird reduces the desirability of the part as a choice serving and present methods subject the product unduly to the hazard of contamination. Improved methods, techniques and equipment need to be developed and tested to reduce the high labor input and contamination hazard for removing ligaments from deboned turkey drumsticks and to increase the effectiveness of removing ligaments from the drumsticks of whole turkey carcasses while minimizing loss of edible meat and the need for additional labor and equipment.

c. Improvements in egg plant operations. In recent years notable advances in egg grading and packing equipment and materials have occurred but handling methods have lagged. For example, the wooden egg case has been replaced by one made of fiber and, more recently, wire baskets for retail display. The new materials require new handling methods. Research is needed to determine the optimum pallet or skid sizes, stacking patterns, load limits, handling methods, and auxiliary handling equipment for specified volumes in order to maximize the advantages gained by an improved product and improved grading and packing equipment; and to reduce unnecessary rehandling and breakage.

d. Poultry boning machine. In order to expand the use of new fabricated convenience poultry products, there is a need to design equipment for deboning poultry meats for such uses. This should increase the usage of economical raw products such as backs, necks, feet, and fowl of the cheaper classes.

e. Equipment to facilitate byproduct usage. The current demand for feeding fats provides an incentive for separating fats and oils from waste waters of meat and poultry processing plants before they enter sewage or disposal systems. There is need to design equipment, possibly on the principle of the cream separator, to salvage these byproducts which are now wasted and, at the same time, reduce pollution in streams and reservoirs.

4. Consumer Packages and Shipping Containers

Improved methods of packaging agricultural products for food purchase programs by the USDA. At the present time the USDA purchases substantial quantities of food for direct donation, school lunch programs, Food for Peace, etc. Commercial packages and packaging materials are generally specified for the products purchased under these programs. Adequate consideration is not given to whether the product is underpackaged or overpackaged. Research should be undertaken to determine the packaging needs for products purchased under current and future USDA programs and to set up standards which can be used by commodity inspectors.

C. Cooperative Marketing

It appears to the Committee that the resources available for this work may need to be increased in order to meet the expressed needs for expanded research. Four areas of work recommended last year are resubmitted:

1. Efficiencies of Multiproduct Dairy Plants

Cooperatives are assuming a greater responsibility for handling and manufacturing reserve milk for major fluid milk markets. As a result, research is needed to provide information that will enable cooperatives to locate and develop plants of optimum size and flexibility to provide maximum returns to dairymen.

2. Coordinated Marketing by Dairy Cooperatives

Based on potential application of research now underway, additional research is needed concerning methods of achieving greater horizontal integration of dairy cooperatives thereby improving their performance on the basis of efficiency of operation and as bargaining agencies.

3. Cost of Livestock Procurement and Assembly

Various alternative methods or arrangements for selling livestock need to be studied to determine which will best serve farmers' needs and help them maintain or improve their bargaining strength. These alternatives might include selling on grade and yield basis, livestock grade basis, through contractual arrangements with slaughterers and feeders, or selling on some kind of futures market or forward selling arrangement.

4. Vertical Integration and Cooperative Poultry Marketing

Research is needed to determine how poultrymen can take advantage of the economic benefits of vertical integration, especially the contractual type, without incurring undesirable consequences. Study is also needed on the feasibility of coordinated effort between cooperatives and other segments of the poultry industry.

D. Economics of Marketing

The first seven items are resubmitted from last year's recommendations:

1. Geographic Price Relationships for Milk

A concentrated large-scale study of the relationships between fluid milk prices in the midwest, the northeast, and the south is needed to analyze the relative competitive advantages of each area and the price differentials which are appropriate to each area.

2. More Reliable Sources of Livestock and Meat Prices

Research is needed to determine representative sources of data on livestock and meat prices and to suggest methods for more reliable collection and dissemination of market information.

3. Reflecting Value Differences in Beef Animals

We recommend that new and additional research be started on quantitative analysis as applied to beef grading with special emphasis on live animal identification.

4. Market Potentials for Shearlings

Research is needed on the market potentials for shearlings processed with glutaraldehyde, a recent development of utilization research. This new process imparts to lamb skins such added qualities as increased comfort in use, launderability, and dyeing characteristics.

5. Bargaining Power of Poultry and Egg Producers

Research is needed to evaluate both individual and group action measures which would maintain the economic health of the poultry industry and assure a fair return to producers.

6. Economic Aspects of Poultry Product Quality

There is need for a study to measure the quality of poultry products at various stages from producer to consumer to determine the causes of variation in product quality and to ascertain the effects of quality programs on costs and returns.

7. Retail Fryer Specials

Research is needed on the effect of retail fryer specials on the wholesale fryer market in general.

8. Overall Study of Livestock Marketing

The economic structure of the Nation's livestock and meat production-marketing complex is in the midst of great change which has been going on for some time. Livestock marketing and processing facilities are becoming more decentralized during a period when most marketing and processing operations for other agricultural products are becoming more centralized. Meatpacking is one of the very few food manufacturing industries in which the number of firms and plants are increasing. Large multispecie packing plants, located in major industrial centers, are being replaced by efficient specialized plants located in livestock production areas.

Very large sums of money are now invested in the present structure of livestock marketing and processing which handles a portion of our food supply equivalent to about half the value of consumer expenditures for food. There has been a great proliferation of packer and processor buying operations, markets, market agencies and dealers in the assembly of livestock. Because of the changes occurring in this very important segment of the U. S. economy, all those concerned with it from producer to consumer need information so that livestock producers, especially, will be aware of the costs of the marketing machinery they are supporting and to provide such other information as will guide them in making future decisions.

A benchmark study is needed that would encompass historical, geographical, technological, and economic developments of the livestock and meat production-marketing complex. This study could provide information on costs and services rendered by the various components of the

marketing system which would help explain the influence of various factors that have contributed to the changes. It should be conducted simultaneously throughout the country within the period of a single year and encompass all the marketing activities from producer to consumer.

9. Beef Futures

A futures market on live cattle is in operation and another is proposed for carcass beef. There is considerable concern within the livestock industry as to the effect these markets will have on prices. Many rumors and opinions are being expressed, some obviously based on very limited knowledge of the principle of futures trading. This situation provides an opportunity for two aspects of public service: (1) education with respect to the principles of future trading by drawing on experiences from existing exchanges for grain, cotton, and other agricultural commodities traded in a futures market, especially perishable items; and (2) to make a critical analysis of the beef futures operations in either live cattle or carcass beef when enough time has elapsed to provide sufficient data to determine its influence upon the pricing structure within the total industry, particularly the prices received by livestock producers.

It is recommended that consideration be given to contracting outside USDA for this study inasmuch as USDA is involved in futures trading of agricultural commodities.

10. Improving Dairy Department Operations in Retail Food Stores

Managers of retail food stores are anxious to improve the operation of the dairy department of the stores but little helpful research is available. Public agencies have provided considerable research on some other products but practically none for dairy. Questions on proper total display area, allocation of space, arrangement of products, location in the store, net and gross profit margins, number of items, and numerous other questions need answers.

11. Display and Instore Marketing Study for Chickens, Turkeys and Eggs

Managers of retail stores are anxious to be better informed on how they can better display their poultry and poultry products but with little helpful research available. Research is needed on total display area required for both fresh and frozen chickens and turkeys, arrangement of products, location in store, number of items and other housewife preferences, as well as both net and gross profit margins.

12. Report on Intentions by Broiler-Hatching Egg Producers

Research is needed to determine the feasibility of establishing an intentions report that would be available 90 days in advance which would indicate the number of day-old breeding chicks being placed by broiler-hatching egg producers. The basic problem is to determine at what point decision-making is established to increase or decrease broiler production. Additional data are needed to know how to build such a program regarding future changes in broiler production.

13. Adequacy of Market Price Information

Additional attention needs to be given to problems of collection, evaluation and dissemination of representative market price information. As markets decentralize the assembly, evaluation, and dissemination of daily and hourly information on livestock supplies, prices, and values become more costly and less efficient. Adequate information is a prime necessity to our marketing system.

14. Egg Prices

The commercial egg industry needs a simpler, more uniform system of pricing according to grades and standards. This would necessitate economic research in the South and in the big consuming areas of the Northeast.

15. Distribution of Lamb and Mutton

The sheep industry has relied heavily on a study of distribution of lamb and mutton in the United States as it occurred in 1954. Due to the high level of mobility of the population and its expansion, it is reasonable to assume that consumption patterns for lamb and mutton have changed in the past ten years. It is recommended that research be conducted to bring the above study up-to-date.

E. Supply-Demand Research, Situation, Outlook and Projections

The Committee commends the work projected on the overall analysis of the feed-livestock economy which can be used in price, supply and consumption forecasts and projections and in appraising economic implications of alternative government programs.

1. Dairy Policy

An evaluation of dairy income and the surplus problem is needed to identify the segments of the problem more specifically as a guide in improving policy formation.

2. Factors Affecting the Demand and Supply for Milk and Its Products

During the post-World War II period the dairy industry has been in a state of flux with a substantial drop in number of dairy farms offset by continued increases in size of herds and in productivity per cow. Sufficient historical data are now available to observe and statistically measure the impact of some of these dynamic changes on production of milk. Consumption patterns of several dairy products have undergone substantial changes since the last comprehensive study in demand for dairy products was made in the mid-1950s. These changes are still occurring and are critically affecting the production-utilization balance of milkfat and solids-not-fat. This has further aggravated the problem of continued surpluses in dairy products. With the continued problem of dairy surplus, analyses of the factors affecting demand, supply and price of milk and dairy products are needed to provide bases for evaluating different proposed programs for coping with the continuing dairy surplus problem.

3. Changing Patterns in the Demand for Meat

Important shifts have been occurring in the demand for meat and poultry products in the past decade. These shifts include an increase in the demand for beef, decreases in the demand for pork, lamb and veal, and the emergence of broilers as a major source of meat. The shifts that have been taking place for the individual meats are related and a thorough analysis is needed to determine the extent these shifts have added to the total demand for meat and the extent the increase in one meat was at the expense of another.

4. Impact of Changes in the Poultry Industry

Rapid changes have been occurring in the technology, structure, financing and organization of the poultry and egg industries and in the relationships of these industries to food retailers. Integration in production and marketing has progressed to such a degree in the broiler industry that estimating prices of live broilers has and will continue to become increasingly difficult. Therefore, new analyses of factors affecting the supply and demand, employing wholesale prices of ready-to-cook broilers, should be undertaken. Short-term changes in the consumption and price of poultry and eggs have become increasingly affected by the promotions of large chain stores. Analyzing newspaper advertising of poultry and eggs could contribute to a better understanding of short-term and intermediate price movements. In addition, progressively more eggs and poultry, particularly, turkey, are being used as raw materials for highly processed foods and new data on utilization are now available. A study should be undertaken to appraise the impact of these developments on demand.

F. Consumer Preference and Quality Discrimination

1. Consumer Preference for Leather in Shoes

Packers, hide dealers, and tanners have expressed concern about the possible effect of nonagricultural, leather-like materials on the market for leather in shoes. Newly developed synthetic materials threaten to seriously reduce the demand for leather in shoes; other substitutes which have been available for some time have already greatly reduced the demand for leather in luggage, handbags, garments, and other products. For example, since World War II leather's share of the market for luggage has decreased from almost 100% to approximately 5%. Since shoes are the only major remaining outlet for leather, information should be obtained from consumers to assist the leather industry in its efforts to maintain its competitive position in the shoe industry. A study should therefore be initiated to ascertain consumers' knowledge, experiences, preferences, and opinions regarding the relative advantages and disadvantages of shoes made of leather in comparison with shoes made of synthetic substitutes.

2. Consumer Preference for Wool Products

An assessment of wool's position in various end uses would be of value to many industry groups such as growers, processors, manufacturers and laboratory researchers. It would also be helpful to those responsible for planning advertising and promotional campaigns in their selection of areas where efforts to increase wool consumption can best be invested. Research on consumers' attitudes, evaluations and preferences for wool as compared with other fibers and on consumers' reactions to new developments such as washable wool should be expanded to provide this information. Highest priority should be given to a study among men about their use of and opinions of fibers and fabrics in tailored clothing, suits, slacks and informal wear coats.